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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Eberhard HOLL	Examiner: Benjamin A. Pezzlo
For: METHOD AND DEVICE FOR CONTROLLING WHEEL BRAKES OF A MOTOR VEHICLE	Art Unit 3683
Filed: August 22, 2001	
Serial No.: 09/935,155	

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Richard L. Mayer (Reg. No. 22,490)

APPEAL BRIEF PURSUANT TO 37 C.F.R. § 1.192(a)

S I R:

In the above-identified patent application ("the present application"), Appellant mailed a Notice of Appeal on December 16, 2003 from the Final Office Action issued by the United States Patent and Trademark Office on August 26, 2003. In the Final Office Action, claims 1 to 4, 11 and 14 to 17 were finally rejected. An Advisory Action was mailed on November 10, 2003.

In accordance with 37 C.F.R. § 1.192(a), this Appeal Brief is submitted in triplicate in support of the appeal of the final rejections of claims 1 to 4, 11 and 14 to 17. For the reasons more fully set forth below, the final rejections of claims 1 to 4, 11 and 14 to 17 should be reversed.

1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is Robert Bosch GmbH of Stuttgart in the Federal Republic of Germany. Robert Bosch GmbH is the assignee of the entire right, title and interest in the present application.

2. RELATED APPEALS AND INTERFERENCES

There are no interferences or other appeals "which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal."

3. STATUS OF CLAIMS

Claims 14 and 16 stand finally rejected under 35 U.S.C. § 102(b) as anticipated U.S. Patent No. 4,717,207 ("Kubota et al.").

Claims 1 to 4, 11, 15 and 17 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Kubota et al. and U.S. Patent No. 6,332,654 ("Yano").

Claims 5 to 10, 12 and 13 have been canceled.

A copy of the appealed claims is attached hereto in the Appendix.

4. STATUS OF AMENDMENTS

In response to the Final Office Action issued on August 26, 2003, a Reply Under 37 C.F.R. § 1.116 was filed on October 23, 2003. No proposed amendments to the claims were presented in the Reply Under 37 C.F.R. § 1.116.

5. SUMMARY OF THE INVENTION

The present invention relates to a method and a device for controlling wheel brakes of a vehicle, in which braking force is maintained and/or built up in at least one operating state at at least one wheel of the vehicle irrespective of the extent of pedal actuation. Abstract, lines 2 to 5. Such an operating state is present when the slope of the road points in the direction of the vehicle's

future direction of travel and/or when the parking brake is engaged. Abstract, lines 5 to 8.

The device includes a control unit 10 for controlling the braking system of a vehicle. Specification p. 4, lines 12 to 13. This control unit 10 includes an input circuit 12, at least one microcomputer 14 and one output circuit 16. Specification p. 4, lines 13 to 15. The input circuit, microcomputer, and output circuit are connected together for the mutual exchange of data using a communication system 18. Specification p. 4, lines 14 to 17. Input lines (which may be a bus system, e.g., CAN) connect various measuring instruments to input circuit 12. Specification p. 4, lines 17 to 19. A first input line 20 leads from a brake pedal switch 22 to control unit 10 and transmits a brake pedal switch signal BLS to it. Specification p. 4, lines 19 to 21. Input lines 24 to 27 connect control unit 10 with wheel speed sensors 28 to 31, via which signals relating to the speeds of the vehicle's wheels are supplied. Specification p. 4, lines 21 to 23.

Additional input lines 32 to 35 are provided via which at least the following values from corresponding measuring instruments or other control systems are transmitted: an actuation value α of an accelerator pedal or of an engine control unit sends the information as to whether the accelerator pedal is pressed or not; a switching signal which indicates that a parking brake is engaged; a value GANG which provides the information concerning an engaged gear; a value M from an engine control which represents a measure for the set engine torque and/or the engine torque to be set and/or a value NMOT which represents the speed of the drive unit; a value which indicates if the drive unit of the vehicle is running. Specification p. 4, lines 25 to 37. In addition, an input line 50 is provided which connects control unit 10 with a slope sensor 52. Specification p. 4, line 37 to p. 5, line 1. The latter outputs a signal from which the slope of the road and its direction is derived. Specification p. 5, lines 1 to 3.

Output lines are attached to output circuit 16 of control unit 10 which activate the control elements for the control of the vehicle's wheel brakes. Specification p. 5, lines 5 to 7. In the exemplary embodiment, the braking system is a hydraulic braking system so that output lines 40 lead to valves 42 for controlling the braking pressure in the individual wheel brakes, while optionally at least one pressure-generating means 46 (pump) for the individual brake circuits is activated via output lines 44. Specification p. 5, lines 7 to 12. At least one control valve 48 is activated via output line 46, the control valve holding the braking pressure constant when the brake pedal is depressed for the purposes of performing an hillholder function. Specification p. 5, lines 12 to 16. Depending on the design, braking pressure lock-in takes place in all or in selected wheel brakes. Specification p. 5, lines 22 to 24.

The standing start aid or hillholder system is intended to free the driver of a vehicle having a manually shifted transmission from using the hand brake when making a standing start on a slope. Specification p. 6, lines 16 to 19. This is attained in such a way that by locking in the braking pressure applied by the driver, i.e., maintaining the applied braking pressure (brake application force), the vehicle is prevented from rolling backwards until the actual standing start operation. This occurs when the slope measured, for example, by a slope sensor, is positive in the direction of the standing start, i.e., it must be feared that the vehicle will roll backwards against the expected direction of travel. Specification p. 6, lines 23 to 27. A similar operation is carried out with the parking brake engaged and the service brake not depressed. In this case, since as a rule, no braking force obtained from the driver can be locked in, the vehicle is also held in place via an active buildup of braking force when the parking brake is released until the driver starts to drive ahead or the gear is disengaged. Specification p. 6, lines 27 to 33.

In the embodiment of the standing start aid or of the hillholder, the closing of valves, the switching valves in particular, locks in the braking pressure applied by the driver in the wheel brake calipers. Specification p. 6, line 35 to p.7, line 1. This takes place in all the wheels of the vehicle to reliably prevent the vehicle from rolling backwards. Specification p. 7, lines 1 to 3. The closing of the valves and accordingly the locking in of the pressure take place if the activation condition is present. Specification p. 7, lines 3 to 5. This assumes that the driver has depressed the brake pedal and the vehicle has come to a complete stop. Specification p. 7, lines 5 to 7. The former is determined by the switching state signal or by a brake pedal actuation signal (e.g., from a potentiometer); the latter is determined on the basis of at least one wheel speed, e.g., in the manner discussed above. Specification p. 7, lines 7 to 10. Moreover, the slope in the direction of the standing start must be positive, the engine running, and/or one gear step or one gear must have been engaged. Specification p. 7, lines 11 to 13. In place of the condition of the engaged brake, active pressure is built up in the wheel brakes by activation of a pump if the parking brake is engaged and the above-mentioned conditions are present except for the depressed brake pedal. Specification p. 7, lines 13 to 17.

The braking pressure is reduced if deactivation conditions are present. Specification p. 8, lines 30 to 31. The suitable release time is believed to be and/or may be critical for the ease of the standing start aide or of the hillholder. Specification p. 8, lines 31 to 33. This release time is obtained from the information of the slope sensor and the electronic engine management system. Specification p. 8, lines 33 to 35. The latter supplies performance quantities such as engine torque (desired by the driver or presently produced), information regarding the accelerator pedal position and/or the engine speed. Specification p. 8, line 35 to p.9, line 1. Release takes place when the engine is taken out of gear, the slope in the standing start direction

(forward or reverse gear) is no longer positive or the driver wishes to make a standing start. Specification p. 9, lines 1 to 4. A desire for a standing start by the driver is present if the brake has been released and sufficient engine torque has been built up to propel the vehicle forward against the existing slope of the road. Specification p. 9, lines 4 to 8. This means that a threshold value is formed as a function of the magnitude of the slope of the road, the locked-in braking pressure or the maintained braking force being released if the torque of the drive unit exceeds this threshold value. Specification p. 10, lines 8 to 12. The operation of the accelerator pedal is analyzed depending on the embodiment, and the engine speed, the desired and/or actual torque of the drive unit is compared with a specified, slope-dependent threshold. Specification p. 10, lines 12 to 15.

Locking-in of the braking pressure is described below in connection with the standing start aid or the hillholder function. Specification p. 9, lines 25 to 27. As shown in Figure 2, in the first step 100, it is checked as to whether the drive unit is running. Specification p. 9, lines 35 to 36. Subsequently in step 102, if the drive unit is running, it is checked as to whether the vehicle is completely stopped. Specification p. 9, line 37 to p. 10, line 1. This takes place, for example, on the basis of the wheel speed signals. Specification p. 10, lines 1 to 3. In the event of a yes response, it is checked in the subsequent step 104 as to whether a gear is engaged. Specification p. 10, lines 3 to 4. This may be a forward gear or a reverse gear. Specification p. 10, lines 4 to 5. If a gear is engaged, on the basis of the information from a slope sensor and possibly the gear information, in the subsequent step 106, it is checked as to whether there is a slope pointing in the direction of travel, i.e., whether the vehicle must start to travel against the slope. Specification p. 10, lines 5 to 10. If this is the case, it is checked in step 108 as to whether the brake pedal is depressed. Specification p. 10, lines 10 to 11. If this

is also the case, according to step 110, the standing start aid or the hillholder is activated by, for example, switching valves as described above and locking in the braking pressure prevailing in the wheel brakes as a consequence of pressing the brake pedal. Specification p. 10, lines 11 to 16. If, according to step 108, the brake pedal is not depressed, a check is made in step 112 as to whether the parking brake is engaged instead. Specification p. 10, lines 18 to 20. This is done by analyzing a corresponding switching signal. Specification p. 10, lines 20 to 21. If the parking brake is engaged, the standing start aid or hillholder is activated in step 114, active pressure being built up in the wheel brakes. Specification p. 10, lines 21 to 23. This may take place by activating a pump which builds up a specific pressure in the wheel brakes. Specification p. 10, lines 23 to 25. If a no response is the result of steps 100, 102, 104, 106 or 112, the function is not activated. Specification p. 10, lines 27 to 27. In this case, the program is terminated and run again at the next time interval. Specification p. 10, lines 27 to 28. After steps 110 and 114, the active flag is set and the program according to Figure 3 is run, also in predetermined time intervals. Specification p. 10, lines 28 to 30.

In the first step 200, a check is made as to whether the brake pedal or the parking brake is released. Specification p. 10, lines 32 to 33. If this is not the case, the system is in standing start aid or hillholder operation. Specification p. 10, lines 33 to 35. This means that the valves are activated in such a way that the braking pressure is maintained or the brake controller is activated in such a way that the braking force applied by the driver or the braking force applied independently of the driver is maintained. Specification p. 10, line 35 to p. 11, line 2. If a pressure or braking force drop is recognized in step 202, which is recognized, for example, on the basis of the measured braking pressure or the measured braking force and/or by the speed signal on the basis of rolling backwards, then pressure

is built up according to step 204. Specification p. 11, lines 2 to 7. After step 204 or in the case of a no response in step 202, the program is terminated and run again at the next time interval. Specification p. 11, lines 7 to 9.

If it was determined in step 200 that the brake pedal is released, then in step 206 the variables supplied by the engine control, engine torque (desired and/or actual torque) Mmot and accelerator pedal position α, and optionally engine speed Nmot are read in. Specification p. 11, lines 11 to 15. It is determined from at least one of these variables in step 208 whether the driver desires to make a standing start. Specification p. 11, lines 15 to 17. This takes place in such a way that, for example, based on the accelerator pedal position signal, it is checked whether the accelerator pedal has been operated. Specification p. 11, lines 17 to 19. In addition, a limit value for the engine torque and/or the engine speed as a function of the slope of the road is present. Specification p. 11, lines 19 to 22.

If the engine torque and/or the engine speed specified by the driver or generated by the drive unit exceeds this limit value, then a desire for a standing start is assumed. Specification p. 11, lines 24 to 26. This is because the engine torque set by the driver or the set speed is sufficient to overcome the slope of the road and to move the vehicle against this slope. Specification p. 11, lines 27 to 29.

If the desire for a standing start was thus recognized, then according to step 210, the standing start aid or the hillholder is deactivated and the pressure is reduced. Specification p.11, lines 31 to 33. This takes place by activation of the brake controllers, which reduce the braking pressure or the braking force either abruptly or in a metered fashion, for example, in accordance with a time function. Specification p. 11, lines 33 to 37. After step 210 the program is terminated, the "non-active" flag is set and the program outlined in Figure 2 is run. Specification p. 11, line 37 to p. 12, line 2. If step 208 did not indicate the desire

for a standing start, then in step 212, a check is made as to whether a neutral gear was selected. Specification p. 12, lines 2 to 4. If this is the case, step 210 follows; otherwise a check is made in step 214 as to whether the slope of the road is no longer positive in the direction of travel (e.g., change of gears from forward to reverse). Specification p. 12, lines 4 to 8. If this is the case, step 210 follows and the function is deactivated, while in the event of a no response, step 202 follows. Specification p. 12, lines 8 to 10. Query step 200 and accordingly also the "no branch" are eliminated in one embodiment, in particular, if a comfortable braking pressure reduction design is desired for the driver and/or if a braking system with active pressure buildup is present. Specification p. 12, lines 10 to 15.

The above-named conditions for the deactivation are used individually or in any desired combination, depending on the design. Specification p. 12, lines 16 to 18. The above-named conditions which supplement the condition of the positive slope of the road or that of the engaged parking brake are used in any desired combination for at least one of these conditions, depending on the design. Specification p. 12, lines 18 to 21.

6. ISSUES

A. Whether claims 14 to 16 are patentable over Kubota et al.

B. Whether claims 1 to 4, 11, 15 and 17 are patentable over the combination of Kubota et al. and Yano.

7. GROUPING OF CLAIMS

Issue A

i. Claims 14 and 16 stand or fall together.

Issue B

i. Claims 1, 11, 15 and 17 stand or fall together;

ii. Claim 2 stands or falls alone; and

iii. Claims 3 and 4 stand or fall together.

8. **ARGUMENTS**

Issue A

Claims 14 and 16 stand finally rejected under 35 U.S.C. § 102(b) as anticipated by Kubota et al. Appellant respectfully submits that Kubota et al. do not anticipate claims 14 and 16 for the following reasons and respectfully submit that the present rejection should be reversed.

Claim 14 relates to a method for controlling a wheel brake of a vehicle. Claim 14 recites that the method includes determining a road slope and determining whether at least one of a brake pedal is depressed and a parking brake is engaged. Claim 14 further recites that the method includes maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of a vehicle. Claim 14 further recites that the method includes reducing the braking force for at least one condition.

Claim 16 relates to a storage medium for storing at least one computer program, wherein the at least one stored computer program is operable for executing in a computing unit a method for controlling a wheel brake of a vehicle. Claim 16 recites that the method includes determining a road slope and determining whether at least one of a brake pedal is depressed and a parking brake is engaged. Claim 16 further recites that the method includes maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition.

Kubota et al. purport to relate to a booster unit for moving a vehicle on a slope in a method of controlling the same. Kubota et al. state that an energization signal, which maintains the master cylinder fluid pressure, is produced if it is determined that a vehicle is in a stopped condition on a slope. Col. 6, lines 62 to 64. The stopped condition determination, however, does not correspond to a brake pedal depression determination or a parking brake engagement determination. For example, as the Final Office Action admits at page 4, Kubota et al. fail to disclose determining whether a brake pedal is depressed. Therefore, the energization signal bears no relationship to the status of the brake pedal under the disclosure of Kubota et al. The Final Office Action therefore apparently bases the instant rejection on the alleged disclosure by Kubota et al. of a parking brake determination. Appellant points out, however, that Kubota et al. produce the energization signal only if it is determined that the parking brake is ***off***. Col. 10, lines 38 to 40 and Fig. 10, step 104. Thus, Kubota et al. do not disclose, or even suggest, "maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with ***one of the brake pedal depressed and the parking brake engaged***," as recited in claims 14 and 16.

To anticipate a claim, each and every element as set forth in the claim must be found in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). That is, the prior art must describe the elements arranged as required by the claims. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). As more fully set forth above, it is respectfully submitted that Kubota et al. do not disclose, or even suggest,

"maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with ***one of the brake pedal depressed and the parking brake engaged***" as recited in claim 14 and claim 16 (emphasis added). It is therefore respectfully submitted that Kubota et al. do not anticipate claim 14 and claim 16. Therefore, reversal of this rejection is respectfully requested.

Issue B - Claims 1, 11, 15 and 17

Claims 1, 11, 15 and 17 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Kubota et al. and Yano. Appellant respectfully submits that the combination of Kubota et al. and Yano does not render obvious claims 1, 11, 15 and 17 and respectfully submits that the present rejection should be reversed.

Claim 1 relates to a method for controlling a wheel brake of a vehicle. Claim 1 recites determining a road slope, determining whether a brake pedal is depressed and whether a parking brake is engaged, maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition.

Claim 11 relates to a storage medium for storing at least one computer program, wherein the at least one stored computer program is operable for executing in a computing unit a method for controlling a wheel brake of a vehicle. Claim 11 recites determining a road slope, determining whether a brake pedal is depressed and whether a parking brake is engaged, maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition.

Claim 15 relates to a method for controlling a wheel brake of a vehicle. Claim 15 recites determining a road slope, determining whether a brake pedal is depressed, and determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed. Claim 15 further recites maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition.

Claim 17 relates to a storage medium for storing at least one computer program, wherein the at least one stored computer program is operable for executing in a computing unit for controlling a wheel brake of a vehicle. Claim 17 recites determining a road slope, determining whether a brake pedal is depressed and determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed. Claim 17 further recites maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition.

The Final Office Action acknowledges at page 4 that Kubota et al. fail to disclose determining whether a brake pedal is depressed and relies upon Yano for allegedly curing the deficiencies of Kubota et al. Specifically, the Final Office Action alleges that "Yano discloses that when it comes to control feedback for hill holding one may interchangeably use brake pedal depression or vehicle speed." Final Office Action at p. 4. The Advisory Action states that Kubota et al. determine whether the parking brake is engaged after determining vehicle speed.

In regard to claims 15 an 17, Appellant respectfully submits that the combination proposed by the Final Office Action does not disclose, or even suggest, "determining whether a parking brake is engaged ***if it is determined that the brake pedal is not depressed***," as recited in claims 15 and 17. Respectfully, only if the vehicle is in **a stopped condition** (which the Examiner asserts is the same as when the brake **is depressed**) is operation stated to go to step 102 and eventually to step 104 where a decision is made as to whether the parking brake is depressed. See col. 10, lines 13 to 42. This is in direct contrast to claims 15 and 17 which recites determining whether a parking brake is depressed if it is determined that the brake pedal is **not depressed**. Therefore, the combination of Kubota et al. and Yano does not disclose all of the limitations of claims 15 and 17.

Further, in regard to claims 1, 11, 15 and 17, Appellant does not agree that Yano cures the admitted deficiencies of Kubota et al. The Final Office Action seems to be relying on Yano's purported determination of the vehicle speed and its purportedly known "interchangeability" with brake pedal depression to remedy Kubota et al.'s admitted lack of disclosure of determining brake pedal depression. See Final Office Action at p. 4. Appellant respectfully submits that Yano's purported disclosure of vehicle speed determination in no way remedies Kubato et al.'s admitted lack of disclosure of brake pedal depression determination for the following reasons.

First, Yano does not state "that when it comes to control feedback for hill holding one may interchangeably use brake pedal depression or vehicle speed." Final Office Action at p.4. The Final Office Action references col. 13, lines 31 to 50, however, this reference does not support the Final Office Action's position regarding interchangeability. The relevant portion of the reference merely states that "when the brake pedal is depressed, the vehicle is in the vehicle stopping condition," col. 13, lines 34 to 35, and that "it is

possible to maintain the pressure within the wheel cylinder such that there is at least enough braking force . . . to keep the vehicle stopped," col. 13, lines 38 to 41. Nowhere does Yano state that either brake pedal depression or vehicle speed may be used interchangeably for control feedback for hill holding. If brake pedal depression and vehicle speed were interchangeable -- which Appellant does not concede -- Appellant respectfully submits that Yano would not require two separate steps to detect both of these variables. Col. 7, lines 4 to 12, where Yano discuss **both** a brake pedal depression detecting step and a separate stopped vehicle determination step.

Second, Appellant respectfully submits that brake pedal depression does not necessarily mean, as the Final Office Action seems to allege on p. 4, lines 9 to 10, that the vehicle speed can be determined to be zero. The brakes can be used to slow the vehicle but not necessarily completely stop it and also the vehicle can be stopped (in the park state, for example) without the brakes being depressed.

Accordingly, Yano's purported disclosure of vehicle speed determination in no way remedies Kubato et al.'s admitted lack of disclosure of brake pedal depression determination. Therefore, the combination of Kubota et al. and Yano does not disclose, or even suggest, determining whether a brake pedal is depressed, as recited in claims 1, 11, 15 and 17.

In rejecting a claim under 35 U.S.C. § 103(a), the Office bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, supra. This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable

expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). As indicated above, it is respectfully submitted that the combination of Kubota et al. and Yano does not disclose, or even suggest, all of the limitations as recited in claims 1, 11, 15 and 17. Therefore, it is respectfully submitted that the combination of Kubota et al. and Yano does not render unpatentable claims 1, 11, 15 and 17.

In view of all of the foregoing, reversal of the present rejection is respectfully requested.

Issue B - Claim 2

Claim 2 stands finally rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Kubota et al. and Yano. Appellant respectfully submits that the combination of Kubota et al. and Yano does not render unpatentable claim 2 and respectfully submits that the present rejection should be reversed.

Claim 2 depends from claim 1 and therefore includes all of the limitations of claim 1. Therefore, it is respectfully submitted that the combination of Kubota et al. and Yano does not render unpatentable dependent claim 2 for at least the same reasons provided above in support of the patentability of claim 1. In re Fine, supra (any dependent claim that depends from a non-obvious independent claim is non-obvious). Appellant further submits that claim 2 is patentable over the combination of Kubota et al. and Yano for the following additional reasons.

Claim 2 recites that the braking force is maintained if at least one of the following is satisfied: a drive unit is running; the vehicle is at a complete standstill; and a gear is engaged.

The Final Office Action references Kubota et al., col. 10, lines 15 to 16 and alleges that "a determination is made if the vehicle speed is zero." Kubota et al. set forth a

series of steps or checks which must be passed or satisfied before reaching step 105 the "energization step," which maintains the brake fluid pressure. Therefore, even if in step 101 a determination is made that the actual vehicle speed is zero or in step 102 a determination is made that the clutch is disengaged this does not necessarily mean that the "energization step" will be reached, i.e., braking force maintained, as recited in claim 2, given that satisfaction of steps 103 and 104 is a prerequisite to the "energization step." Col. 10, lines 13 to 49. Step 103 requires that the shift position be in the first speed or the reverse position and Step 104 requires that the parking brake is not operated. See col. 10, lines 30 to 42.

Accordingly, it is respectfully submitted that the combination of Kubota et al. and Yano does not render unpatentable claim 2.

In view of all of the foregoing, reversal of the present rejection is respectfully requested.

Issue B - Claims 3 and 4

Claims 3 and 4 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Kubota et al. and Yano. Appellant respectfully submits that the combination of Kubota et al. and Yano does not render unpatentable claims 3 and 4 and respectfully submits that the present rejection should be reversed.

Claims 3 and 4 ultimately depend from claim 1 and therefore include all of the limitations of claim 1. Therefore, it is respectfully submitted that the combination of Kubota et al. and Yano does not render unpatentable dependent claims 3 and 4 for at least the same reasons provided above in support of the patentability of claim 1. In re Fine, supra. Appellant further submits that claims 3 and 4 are patentable over the combination of Kubota et al. and Yano for the following additional reasons.

Claim 3 recites the braking force is reduced if at least one of the following is recognized: a driver acts to make a standing start; a neutral gear is engaged; and the road slope is no longer in a travel direction.

Claim 4 depends from claim 3 and further recites that the braking force is reduced if the brake pedal is released.

The Final Office Action at p. 4 relies on the following reference to allegedly establish that Kubota et al. disclose reducing the braking force when a driver acts to make a standing start:

> The release timing control is carries out in such a manner that the target driving wheel torque T_0 proportional to the vehicle tilt angle θ is calculated by a look-up table in accordance with the actual vehicle tilt signal θ from the vehicle tilt sensor 204. When the actual driving wheel torque T detected by the driving wheel torque sensor 208 reaches the target driving wheel torque T_0, the control unit 21 produces the release signal (n) and it is applied to the solenoid 69 of the valve 19', so as to release the brake fluid pressure. In this case, the brake fluid pressure holding valve 19' is operated similarly in the case of the first embodiment . . . by performing the ON and OFF operations of the two valves.

Col. 8, line 65 to col. 9, line 10. However, the foregoing does not disclose reducing the braking force when a driver acts to make a standing start, which requires both a build up of torque **and** a release of the brakes. In this regard the Specification states:

> Release takes place when the engine is taken out of gear, the slope in the standing start direction (forward or reverse gear) is no longer positive or the driver wishes to make a standing start. A desire for a standing start by the driver is present **if the brake has been released** and sufficient engine torque has been built up to propel the vehicle forward against the existing slope of the road.

Specification at p. 9, lines 1 to 8 (emphasis added).

Further in regard to claim 4, the Final Office Action alleges that this claim reads on a conventional brake in that releasing the brake pedal releases the brakes. Final Office Action at p. 4. Appellant respectfully submits that nowhere does the combination of Kubota et al. and Yano disclose, or even suggest, reducing the braking force maintained independently of an extent of brake pedal actuation when the brake pedal is released. As indicated above, Kubato et al. describe releasing the brakes only when the driving wheel torque sensor 208 reaches the target driving wheel torque T_0. See col. 9, lines 1 to 10. Further, in regard to conventional brakes, there is no reduction of a braking force which was maintained independently of an extent of brake pedal actuation, as recited in claim 1, from which claims 3 and 4 ultimately depend.

In view of the foregoing, it is respectfully submitted that the combination of Kubota et al. and Yano does not render unpatentable claims 3 and 4. Reversal of this present rejection is respectfully requested.

9. CONCLUSION

For at least the reasons indicated above, Appellant respectfully submits that the art of record does not disclose or suggest Appellant's invention as recited in the claims of the above-identified application. Accordingly, it is respectfully submitted that the invention recited in the claims of the present application is new, non-obvious and

useful. Reversal of the Examiner's rejections of the claims is therefore respectfully requested.

Respectfully submitted,

Dated: 3/16/04

By: By: 35,952

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APPENDIX

1. A method for controlling a wheel brake of a vehicle, the method comprising:

determining a road slope;

determining whether a brake pedal is depressed and whether a parking brake is engaged;

maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle; and

reducing the braking force for at least one condition.

2. The method of claim 1, wherein the braking force is maintained if at least one of the following is satisfied: a drive unit is running; the vehicle is at a complete standstill; and a gear is engaged.

3. The method of claim 1, wherein the braking force is reduced if at least one of the following is recognized: a driver acts to make a standing start; a neutral gear is engaged; and the road slope is no longer in a travel direction.

4. The method of claim 3, wherein the braking force is reduced if the brake pedal is released.

11. A storage medium for storing at least one computer program, wherein the at least one stored computer program is operable for executing in a computing unit a method for controlling a wheel brake of a vehicle, the method comprising:

determining a road slope;

determining whether a brake pedal is depressed and whether a parking brake is engaged;

maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the

parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle; and

reducing the braking force for at least one condition.

14. A method for controlling a wheel brake of a vehicle, the method comprising:

determining a road slope;

determining whether at least one of a brake pedal is depressed and a parking brake is engaged;

maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle; and

reducing the braking force for at least one condition.

15. A method for controlling a wheel brake of a vehicle, the method comprising:

determining a road slope;

determining whether a brake pedal is depressed;

determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed;

maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle; and

reducing the braking force for at least one condition.

16. A storage medium for storing at least one computer program, wherein the at least one stored computer program is operable for executing in a computing unit a method for controlling a wheel brake of a vehicle, the method comprising:

determining a road slope;

determining whether at least one of a brake pedal is depressed and a parking brake is engaged;

maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle; and

reducing the braking force for at least one condition.

17. A storage medium for storing at least one computer program, wherein the at least one stored computer program is operable for executing in a computing unit a method for controlling a wheel brake of a vehicle, the method comprising:

determining a road slope;

determining whether a brake pedal is depressed;

determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed;

maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle; and

reducing the braking force for at least one condition.